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ABSTRACTS



THE CONTROL OF OVINE ENTEROTOXEMIA BY THE USE OF CLOSTRIDIUM PERFRINGENS TYPE "D" BACTERIN. The control of ovine enterotoxemia is an ever present problem under commercial feedlot conditions. Even where well controlled rations are fed, the average commercial feeder has learned to accept a 1 percent overall death loss per month without becoming unduly alarmed.

The use of biologic agents to control this disease has been under investigation in foreign countries and more recently in this country. The most logical approach appears to be through the establishment of active immunity to the Type D toxin of *Clostridium perfringens*. To determine the efficiency of a bacterin toxoid developed against *Cl. perfringens*, type D, rather rigid tests using large numbers of sheep were conducted in 1946 and 1947.

In 1946, 1,880 sheep were immunized with the bacterin and 1,903 sheep served as a control group. The technique of immunization consisted of injecting 5 cc. of the bacterin slightly posterior to the axillary space. The rations fed the two groups were identical and consisted of corn, molasses, soybean oilmeal, mineral and chopped alfalfa hay. The amount of feed was regulated by the number of deaths and the amount of diarrhea. The results in this experiment showed that in the control group 51 sheep died and 30 were culled, while only 23 of the immunized group died and 11 were culled. No other significant difference could be

determined between the two groups. The only undesirable reaction observed from the injection of the bacterin was a post-vaccinal lameness that lasted for 24-48 hrs.

The results in 1947 were equally encouraging. The control group consisted of 1,970 sheep, while 1,967 sheep were immunized with a bacterin toxoid approximately five times the strength of the bacterin used the previous year. Nine hundred and sixty of the immunized group were given a second injection two weeks later. Only 9 sheep died in the immunized group while 73 died in the control group. The rations fed the two groups were identical with one exception. The immunized group was fed a ration consisting of up to 60 percent corn. Midway in the experiment the molasses content of both rations was increased and the amount of corn was decreased.

The results of these two experiments leave no doubt of the ability of the bacterin to establish an active immunity to ovine enterotoxemia. Under normal feeding conditions of approximately three months duration, one dose of the bacterin in all likelihood provides sufficient protection for that period. Another conclusion reached from the experiment was that immunized lambs can be fed larger quantities of fattening elements than is customarily fed.

[Baldwin, Earl M., Jr., Frederick, L. D., and Ray, J. D. The Control of Ovine Enterotoxemia by the Use of *Cl. perfringens*, Type D Bacterin. Jour. Vet. Res. 9:296-303 (July) 1948]

SODIUM SULFAMETHAZINE IN TREATMENT OF ACTINOMYCES NECROPHOROUS INFECTIONS OF THE BOVINE FOOT. The use of sodium sulfapyridine has revolutionized the treatment of foot-rot. Since this drug has become difficult to obtain, a search has been made for other sulfonamides which might be useful in the treatment of necrophorous infections.

Twenty-seven cases of foot-rot, in a college herd in which foot-rot had been enzootic for years, were treated with sodium sulfamethazine. Each case was handled only the length of time necessary to make a diagnosis of foot-rot and to classify it as to type. Dosages varied from 25 to 125 Gm. All of the cattle treated responded to a single dose of the drug with the exception of two animals that had received 50 Gm. at the initial treatment. Both of these responded to the second treatment. In many cases, the inflammation began to subside on the day following treatment, and in most cases recovery had occurred by the third day.

No shock reactions were noted when using a 25 percent solution of the drug. However, an increase in respiration was observed at times which subsided soon after the injection was completed. However, it is quite possible to produce shock in animals by giving excessive doses of the drug.

Preliminary evidence indicated that an optimal intravenous dose of sodium sulfamethazine in the treatment of early cases of foot-rot varies between 3.5 and 4.5 Gm. per 100 lbs. (0.5-0.75 gr./lb.).

[Lindley, Dean C. Sodium Sulfamethazine in Treatment of *Actinomyces necrophorous* Infections of the Bovine Foot. Jour. A.V.M.A. 113:465-467 (Nov.) 1948]

CHLORDANE POISONING: SYMPTOMATOLOGY AND PATHOLOGY. In acute clinical cases the onset is sudden. Bleating or groaning, grinding of teeth, blindness, violent paddling, opisthotonos, and ultimate cyanosis just before death are regularly observable. In subacute to chronic cases there is no clear-cut beginning, partial to complete blind-

ness and locomotor ataxia appear gradually. Affected animals may circle, jump imaginary objects, stagger or suffer periodic convulsions.

Petechial and larger hemorrhages, characteristically subserous in the large and small intestine, and subepicardial in the heart are consistent autopsy findings. Congestion of the brain and spinal cord are often observed.

A differential diagnosis is somewhat of a problem. The symptoms and lesions of chlordane poisoning are similar in certain respects to those found in poisonings by sodium chloride, sodium nitrate, chloroform, cockleburs, DDT, santonin, and chlorides in general.

From the clinician's viewpoint it will not be so easy to differentiate DDT and chlordane poisonings. In DDT poisoning there is no apparent blindness, even just before death. Partial to total blindness is present from the beginning in chlordane affected animals. In general, animals poisoned by DDT, once they enter into convulsions, remain so until death or recovery. Those affected by chlordane may have periodic convulsions at considerable intervals of time.

The author has tabulated the clinical and autopsy observations in nine cases of chlordane poisonings.

[Radeleff, R. D. Chlordane Poisoning: Symptomatology and Pathology. Vet. Med. 93:342-347 (Aug.) 1948]

SURITAL SODIUM, A NEW ANESTHETIC AND HYPNOTIC. From a series of short-acting thio-barbiturates studied, surital sodium was chosen because of its low toxicity and desirable pharmacologic properties.

Surital sodium anesthesia was used in a total of 53 operations on adult male dogs. The operations consisted of intramuscular implantations of foreign bodies, cecectomies, tumor removals, and laparotomies for liver and spleen surgery. From data compiled on these operations and on the experimental use of surital sodium in 19 other dogs, a dose of 17.5 mg./kg. administered intravenously was

found satisfactory for abolishing pain for periods of 12 to 15 minutes. The induction and recovery periods were without undesirable side reactions, and recovery was complete in three to five hours.

As with most barbiturates, the respiration was depressed and, in fatal doses, stopped a few minutes prior to heart failure. When this occurred, the use of gentle artificial respiration for a few minutes usually restored regular breathing. The administration should be slow and at an even rate of not more than 3 cc. per minute of the 2.5 percent solution. When the respiratory rate is severely depressed, more time should be taken to complete the injection.

It is now routine to administer 17.5 mg./kg. of this drug for all operations of short duration. If unforeseen difficulties are encountered and the operation is prolonged, an additional one-fourth of the original dose is administered. This procedure has proved satisfactory for operations lasting up to forty-five minutes. The duration of surgical anesthesia has been found to be appreciably increased by the combined use of morphine or methadon.

[Reutner, T. F. and Gruhzit, O. M. Sodium Surital, A New Anesthetic and Hypnotic. Jour. A.V.M.A. 113:357-359 (Oct.) 1948]

RESPONSE OF DOGS TO LIVER EXTRACTS CONTAINING THE PERNICIOUS ANEMIA FACTOR.

Young growing dogs were fed a niacin-free basal ration containing 1 percent sulfasuxidine. The animals began to lose weight and in 14-18 days began to exhibit symptoms of blacktongue. Niacin was initially effective in counteracting this syndrome, but failed to bring about consistent responses. Folic acid helped to produce a more consistent response to niacin, but the macrocytic anemia that developed did not respond to folic acid therapy. When folic acid was withdrawn from the regimen the animals lost weight and developed a more severe anemia. A point was reached in all cases where the animals failed to respond to the folic acid, but responded completely to the administration of liver extract.

As little as one U.S.P. unit of pernicious anemia activity was effective in bringing about a complete remission of the anemia observed in dogs which had failed to respond to niacin. Apparently the factor is not stored to any great degree, and must be injected regularly. The liver extracts were used first with adequate amounts of folic acid. When folic acid was omitted, poor results were obtained with the extract. When folic acid was added, a response was seen, indicating that it was necessary. It would appear that all three factors, niacin, folic acid, and the liver extract, are required. If any one of the three is present in an inadequate amount, it is a limiting factor, and optimal growth and blood formation will not take place. This was true only when the protein level was about 19 percent. When the level was increased to 24 or 30 percent the need for folic acid could not be demonstrated.

Higher levels of casein possibly favor the intestinal synthesis of folic acid in the dog.

Ruegamer, W. R., Brickson, W. L., Torbet, N. J., and Elbehjem, C. A. Response of Dogs to Liver Extracts Containing the Pernicious Anemia Factor. Journal of Nutrition 36:425-435 (October) 1948.

Fistulous Withers

Examination of a long series of clinical cases of fistulous withers has disclosed that the affected horses regularly carry infections of two cattle ailments.

Typical cases of fistulous withers have been produced experimentally by the injection into horses of the germs of bovine brucellosis and actinomycosis.

All of the observations concerning fistulous withers apply also to poll evil, a horse disease similar to fistulous withers except that it affects the poll instead of the withers.

This information is contained in a report submitted to the American Veterinary Medical Association by Drs. L. M. Roderick, Alice Kimball, W. M. McLeod and E. R. Frank, all associated with Kansas State College, Manhattan.